

TITLE OF THE INVENTION

METHODS FOR PREPARING BALL GRID
ARRAY SUBSTRATES VIA USE OF A LASER

CROSS-REFERENCE TO RELATED APPLICATION

OK
SMT
12-07-04

[0001] This application is a divisional of application Serial No. 09/863,676, filed May 21, 2001, pending.

BACKGROUND OF THE INVENTION

[0002] Field of the Invention: The present invention relates to the use of a laser to remove surface contamination and oxidation from a ball grid array substrate and to promote adhesion of material for molding operations and other operations. The laser etching can be configured to cover the entire substrate or focused on local areas of the substrate, such as laser etching being pinpointed to the epoxy molding compound/solder resist (EMC/SR) interfaces.

[0003] Semiconductor packages are generally fabricated by mounting and electrically connecting the semiconductor die (also known as "semiconductor device") to a carrier substrate appropriate for the chip type and the subsequent use of the package. For example, ball-grid-array (BGA), chip-on-board (COB), board-on-chip (BOC), chip-scale or leads over chip (LOC) mounting arrangements may be made on printed circuit board strips, tape frames and other carrier substrates known in the art. After mounting the semiconductor die to the substrate, the hybrid combination of the components are electrically connected by wire bonding, conductive adhesives, solder reflow or other connections known in the art. The package is then encapsulated for protection from various atmospheric ailments. Often the package becomes contaminated or oxidized due to atmospheric contaminants.

[0004] During the fabrication of the semiconductor package, a masking material (also known as resist) is used to enhance selectivity on both the semiconductor die and the circuits on the substrate. Resist plays a major role in the lithography process for fabrication of semiconductor devices in which the sizes, as well as the positions of the transistors, resistors and